



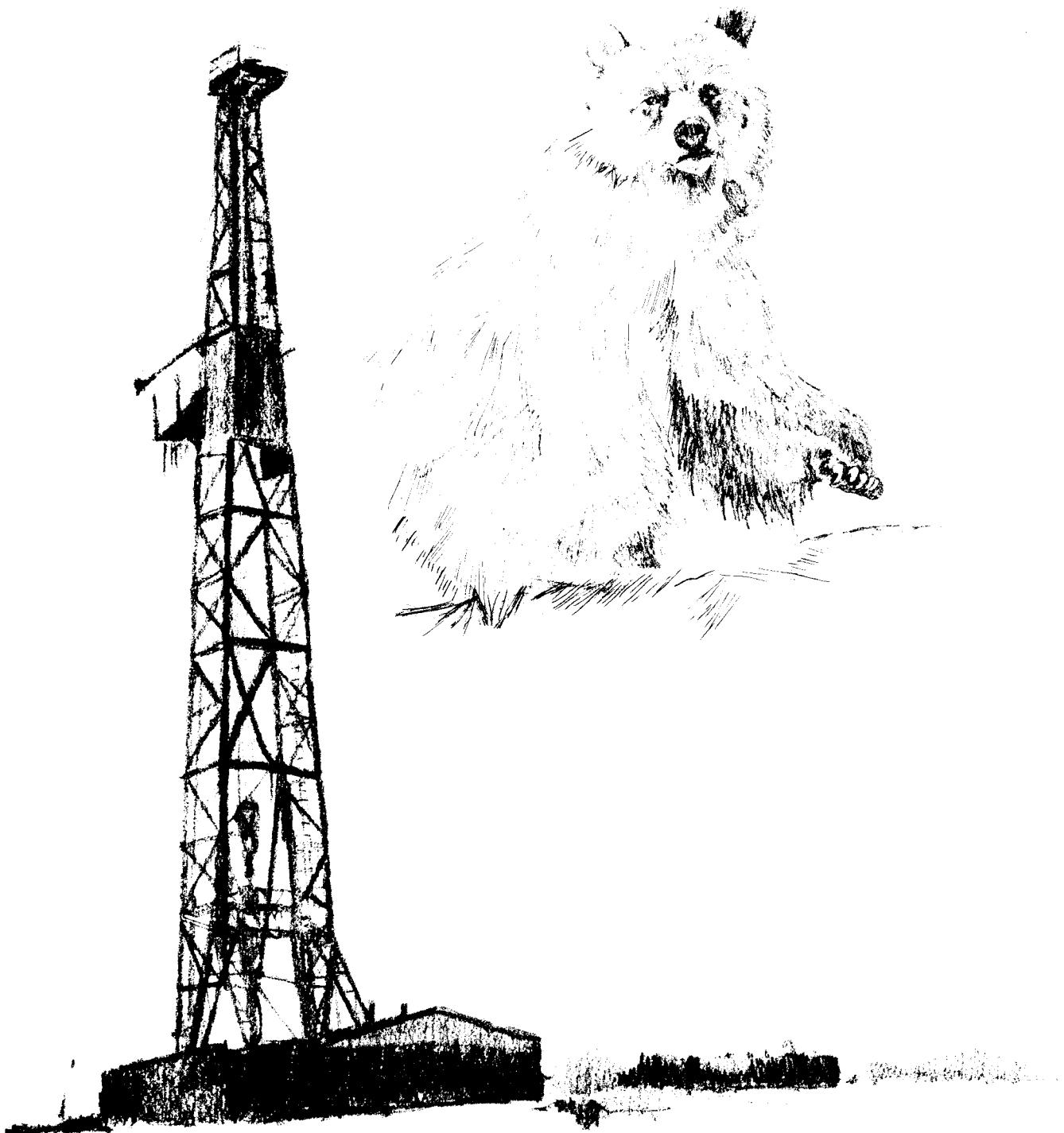
United States Department of the Interior
Bureau of Land Management

FINAL

Lewistown District Office
Great Falls Resource Area

June 1992

Blackleaf Environmental Impact Statement



The Bureau of Land Management is responsible for the stewardship of our public lands. It is committed to manage, protect, and improve these lands in a manner to serve the needs of the American people for all times. Management is based on the principles of multiple use and sustained yield of our nation's resources within a framework of environmental responsibility and scientific technology. These resources include recreation; rangelands; timber; minerals; watershed; fish and wildlife; wilderness; air; and scenic, scientific, and cultural values.

BLM-MT-ES-92-007-4111



United States Department of the Interior



BUREAU OF LAND MANAGEMENT
Great Falls Resource Area Office
812 14th Street North
Great Falls, Montana 59401

Dear Reader:

This final environmental impact statement (FEIS) on the Blackleaf Field Development project is provided for your information. It is the result of an interagency effort led by the Bureau of Land Management, with the Forest Service and Montana Department of Fish, Wildlife, and Parks as cooperating agencies.

The FEIS documents the issues and impacts, including cumulative effects, associated with reasonably foreseeable oil and gas activities in the Blackleaf Unit and surrounding area. It explores alternative ways of integrating oil and gas activities with the area's other valuable natural resources. And most importantly, it assesses a wide range of mitigation measures which can be used to reduce impacts.

No decision is being made at this time regarding development of the Blackleaf Field. However, a decision will be issued following receipt of the first proposal for oil and gas activity within the Blackleaf Unit. Proposals may be submitted at any time in the form of applications for permit to drill (APDs), Sundry Notices, or by other appropriate means. Such proposals may be approved, denied, or approved with modification, based on the results of agency review. Public notification and opportunities for public involvement and administrative review of decisions will be provided.

The Blackleaf FEIS will be used as a partial basis for making future site-specific decisions. Additional analysis, such as cultural resource inventories and documentation, will be completed at the time development activities are proposed. Such analysis will evaluate the site-specific impacts associated with wellsites, roads, pipelines, and related facilities, and will assure full compliance with all applicable laws, regulations, and guidelines. Any additional environmental analysis and documentation will be tiered to this Blackleaf FEIS.

Development proposals which are essentially the same as those analyzed in the Blackleaf FEIS will require less additional analysis and documentation than proposals which are substantially different. For example, proposed activities which are essentially the same as those associated with the step-out wells analyzed in the preferred alternative (Alternative 4) will not require additional consultation with the U.S. Fish and Wildlife Service regarding threatened and endangered species, since such consultation has already been completed. Exploratory wells, on the other hand, will require consultation prior to reaching a decision.

A number of changes have been made between the draft environmental impact statement (DEIS) and FEIS, largely in response to public comments. Changes are highlighted in the FEIS using shaded text. In some cases, entire sections have been revised. Readers are urged to refer to both the DEIS and FEIS when reviewing these actions.

The agencies involved wish to thank all those who provided suggestions and comments on the DEIS. Please keep in mind that additional opportunities for public involvement, including administrative review of decisions, will be provided. A Record of Decision on the Blackleaf FEIS will be prepared and provided to everyone on the FEIS mailing list following receipt of the first development proposal for the Blackleaf Unit. We look forward to your continued interest in management of this special area.

Sincerely,

Richard L. Hopkins
Area Manager

**United States Department of the Interior
Bureau of Land Management
Lewistown District Office
Lewistown, Montana**

FINAL

BLACKLEAF
Environmental Impact Statement

This final environmental impact statement (EIS) discusses management options for oil and gas development on 58,503 surface acres and 40,327 federal subsurface acres in northwest Montana. The EIS area contains a mix of private land and lands managed by the Bureau of Land Management, the Forest Service and the State of Montana, which are all cooperating agencies in this project.

This final document analyzes the environmental and social consequences of four management alternatives (including the preferred alternative) through the life of the Blackleaf Unit and its surrounding area (approximately 25 years at current production rates).

Alternative 1, the No Action Alternative, would limit oil and gas development to the existing wells and their related equipment, as well as allowing the reinjection well. Alternative 2 would allow industry to develop the known energy resources within the EIS area with minimal restrictions. Alternative 3 would favor resource protection while allowing some development to occur. Alternative 4, the Preferred Alternative, represents a mix of resource considerations and energy resource production.

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SUMMARY

PURPOSE AND NEED

This final environmental impact statement (EIS) analyzes and discloses the impacts of full field oil and gas development along the Rocky Mountain Front in Teton County, Montana. The EIS includes three alternative scenarios that focus on various levels (number of wells) of development and a No Action Alternative.

The Bureau of Land Management (BLM) is the lead agency since the Bureau is responsible for permitting oil and gas exploration and development activities on federal mineral estate. The Forest Service (FS) and Montana Department of Fish, Wildlife and Parks (MDFWP) are cooperating agencies in this effort because of the significant surface acres and important resources they manage within the EIS area.

Because of the rights and expectations of oil and gas lease holders; the nature of oil and gas exploration and development; public concerns; the occupied threatened and endangered species habitat; the many resource values present in the region; recommendations from other agencies; and because BLM policy calls for a field development analysis after the second producing well has been developed, this final EIS was prepared.



ISSUES AND AREAS OF CONTROVERSY

The general public, local civic leaders and personnel from the BLM, USFS, MDFWP, and other government agencies were asked to help define the major concerns regarding oil and gas development in the EIS area. Public meetings were held in Choteau, Great Falls, Missoula, Browning, Cut Bank and Helena in the fall of 1985, to solicit public comments. The BLM and FS received 13 letters from individuals and groups commenting on issues and concerns. All comments were categorized in the following manner.

What would be the impacts of oil and gas development on:

1. wildlife (especially grizzly bears, elk, deer, bighorn sheep, Rocky Mountain goats & raptors);
2. the scenic quality of the EIS area;
3. the adjacent Bob Marshall wilderness area;
4. the economic foundation of the area;
5. area landowners;
6. health and safety;
7. tourism and recreation; and
8. what would be the cumulative effects of oil and gas development?

The intent of this EIS is not to approve or deny one resource use over another. The purpose is to provide a full discussion of all significant environmental impacts and cumulative effects that may result from full field development of this area. This EIS also explores ways to avoid, minimize or otherwise mitigate adverse impacts to the resources present in the area.

Alternative 1: No Action

In Alternative 1, the four producing gas wells (1-5, 1-8, 1-13, 1-19) would remain active; however, the storage facilities would be removed and the gas piped to a central gas processing facility located on private surface over private minerals. Each of these sites would be partially

rehabilitated; the water disposal pits may be filled in and the locations reseeded with native vegetation. The only facilities located at these wellsites would be the wellhead and measurement equipment contained inside a small building and the separation and dehydration equipment.

All condensate would be stored at the central gas facility and all wells would be remotely monitored via computer from this facility. The natural gas would be piped east to tie in with a Montana Power pipeline.

Any water produced from these sites would be disposed of by one of the following methods:

1. If the volume of produced water is small enough (less than 5 barrels/day), it could be disposed of on location in a fenced, lined, surface pit.
2. The water could be stored on location in a large holding tank, requiring periodic removal by vehicle.
3. The water could be piped to a central facility where it would be readied for injection into the 1-16 injection well. In this alternative, as well as Alternatives 3 and 4, this central facility would be the gas processing facility. Under Alternative 2, the water would be readied for reinjection at the 1-8 wellsite.

No other development activity would be allowed under this alternative and future Applications for Permit to Drill (APD) in the EIS area would be rejected.

Alternative 1 (No Action) Environmental Consequences

The oil and gas industry would be most impacted by this alternative since only 2 of the 25 federal leases in the EIS area would be developed. The reservoir produced by the 1-5 and 1-8 wells would produce between 9.4 and 18.5 billion cubic feet (BCF) of the estimated 10.4 to 29.8 BCF of recoverable natural gas reserves. The reservoir produced by the 1-13 and 1-19 wells would produce between 4.3 and 8.5 of the estimated 7.4 to 75.8 BCF of recoverable reserves.

This alternative would have very little negative impact to the other resources due to the short-term impacts of constructing the central gas plant and installing the reinjection pipeline.

Alternative 2: Resource Production

Under Alternative 2, production facilities (storage tanks) would be located onsite.

Alternative 2 is the maximum development alternative, allowing nine step-out wells and six exploration wells. The step-out wells would require production facilities onsite, with natural gas being piped to the Gypsy Highview Plant, 15 miles east of the EIS area. Periodic removal of the condensate from the onsite production facilities would be necessary.

Produced water could be disposed of as discussed in Alternative 1.

This alternative would require 15.55 miles of new road construction and 15.4 miles of new pipeline, 7.15 miles of which would not be adjacent to the access road and 8.25 miles would be adjacent to the access roads. There are 8.45 miles of pipeline currently in place.

This EIS assumes the exploration wells to be dry holes. Therefore, the analysis of these wells addresses exploration through abandonment; and ESA Section 7 Consultation with the USFWS has not been completed for the exploration wells.

Alternative 2 Environmental Consequences

Impacts to air quality would increase due to the nine wells projected with production facilities located onsite. These impacts would not approach federal or state standards.

Hydrogen Sulfide (H₂S) is a concern. However, if American Petroleum Institute guidelines are followed during drilling, the chances of a H₂S blowout of any magnitude would be minimal.

There would be no negative impacts to the geology of the area. Additional subsurface geologic information gained from new drilling would be a positive impact.

The construction activities and increased human activity associated with this alternative could create negative impacts to cultural resources. Road, drill pad and pipeline construction would disturb the context in which paleontological resources may be found. However, this could be a positive impact, possibly leading to new discoveries and additional knowledge.

Seventy acres of the proposed development in this alternative would occur on soil types with low soil stability hazards, resulting in low impacts from development. One hundred seventy-two acres of the development would occur on soil types with moderate hazards; increasing development costs to mitigate soil erosion and/or off site sediments pollution hazards. This alternative has the greatest soil stability risk associated with development.

This alternative would disturb approximately 172 acres of vegetation: 79 acres of coniferous forest areas, 106 acres on grassland, about 24 acres of scree/rockland and 32 acres of riparian habitat. This would reduce the forage potential of the area by about 53,000 pounds of total production per year. Much of this impact would be mitigated by reestablishing the vegetation after rehabilitating drill sites and pipelines routes.

Impacts to livestock would occur in four allotments with the loss of 103 acres of available forage. However, it is unlikely that livestock numbers would be reduced because of this loss. Impacts would be mitigated through partial rehabilitation of producing wells (those areas not needed for producing a well), reseeding pipeline corridors and complete rehabilitation of dry wells.

This alternative would create the greatest impact to wildlife and their various habitats; affecting 113,070 acres of important habitat and 99 special habitat features. Animals would be displaced due to increased vehicular access during the production phase. Impacts could be lessened through the use of timing windows during exploration.

The roadless status of the Teton Roadless Area would be reduced by 2,600 acres. This would constitute a 4% land area reduction for the Roadless Area and a 17% reduction in the size of the Blackleaf Unit of the Roadless Area.

Impacts to surface water under this alternative would be minor; most drill sites would be located away from the small amount of surface water in the EIS area. Most sediment would be transported during spring snow melt or after severe thunderstorms. Impacts would be minimized by limiting construction as much as possible in the flood plain, or by performing any construction in the floodplain after snow melt and the spring rainy season.

There would be no significant impact to groundwater because of the low volumes expected, the filtering effect of the alluvial gravels and the cementing off of all water zones to prevent contamination of groundwater during drilling.

Significant impacts to visual quality would occur from this alternative. Several roads would be noticeable to all view-

ers and would require a number of switchbacks to access the wellsites. Two access roads would cross through the BLM's Blind Horse Outstanding Natural Area, which has a Class I visual resource management objective and no amount of design or mitigation would reduce the impacts to an acceptable level for this rating. Mitigation would involve keeping pad size as small as possible, designing developments in an uneven form, painting structures, berthing well pads and placing height limitations on surface equipment.

This alternative would result in a reduction of 80 acres from a semi-primitive to a roaded, natural recreation setting. Access would be increased, a positive or negative impact depending on the perspective of the person using the area and the recreation experience they hope to have.

Noise levels would increase under this alternative, due to increased development and traffic. Many of these noises would be short term. These noises could drive wildlife away from wellsites and access roads. For individual wellsites, this would not be significant. For a developing field, these influence zones could overlap and may have an adverse impact on wildlife.

Compared to the other alternatives, Alternative 2 allows the maximum development of the oil and gas resources within the EIS area. Thirteen of the 25 federal leases would be developed. The reservoir produced by the 1-5 and 1-8 wells would have an additional well drilled. The total recovery from this reservoir would range from 10.4 to 29.8 BCF. The reservoir produced by the 1-13 and 1-19 wells would be further evaluated by up to eight step-out wells. Production estimates for this reservoir range from 7.4 to 75.8 BCF.

Alternative 2 would require 15.55 miles of new road construction. Special design methods would be required in those areas with high slump potential. A total of 69.6 miles of road would be in use. Roads accessing non-producing wells would be reclaimed and revegetated.

Alternative 3: Resource Protection

This alternative would favor the protection of wildlife, visual resources, air and water quality and other surface resources while allowing a moderate level of oil and gas development. The alternative would adhere strictly to the Interagency Rocky Mountain Front Wildlife Guidelines (1984); which provide protective measures primarily for grizzly bears, mountain goats, bighorn sheep, elk, mule deer and raptors.

Other resources such as visual quality, air and water quality, etc. would be protected by using special construction and design techniques and special protective stipulations.

A total of nine wells would be allowed under this alternative: four existing (producing) wells, one injection well for disposal of produced water, two step-out wells and two exploration wells. Production facilities would be located off site at a central facility on private surface over private minerals.

A total of 21 miles of road would be used in this alternative. However, only 2.1 miles of new road construction would be necessary.

Approximately 13.4 miles of pipeline would be necessary to transport gas to the central production facility; 4.1 miles would not be adjacent to the access road; and 0.8 miles would be adjacent to the access road. There are 8.45 miles of pipeline currently in place.

Alternative 3 Environmental Consequences

This alternative is very similar to Alternative 2 with two major differences; gas condensate would be stored at a central production facility with remote monitoring, and only two step-out wells and two exploration wells would be allowed.

The effects to resources would also be similar to Alternative 2, but proportionately less.

Impacts to wildlife would be much less in this alternative than Alternative 2. Approximately 55,500 acres of wildlife habitat and 37 habitat features would be affected. Remote monitoring of the wellheads from the central production facility and strict enforcement of the Interagency Rocky Mountain Front Guidelines would help mitigate impacts.

Oil and gas resource development and production would be limited under this alternative. Eighteen of 25 leases would not be developed. Timing restrictions, based on the Rocky Mountain Front Wildlife Guidelines, would delay drilling and development activities. Delays would increase costs, decrease production quantities, and, may result in the premature abandonment of producing wells.

The reservoir produced by the 1-5 and 1-8 wells would produce between 9.4 and 25.4 BCF of gas, a 1.0 to 4.4 BCF reduction from Alternative 2. Only one additional well would be drilled in the reservoir containing the 1-13 and 1-19 wells. Total production from this reservoir would range between 4.3 and 19.5 BCF, a 3.1 to 56.3 BCF reduction from Alternative 2.

Alternative 4: Preferred Alternative

This alternative balances Alternative 2 with Alternative 3 and allows a level of oil and gas production, while protect-

ing the resources within the EIS area. The agencies feel this alternative best meets the requirements of law and regulation as well as their obligations to oil and gas leaseholders to develop their lease while minimizing the adverse impacts to natural resources.

A total of 18 wells would be allowed: 4 existing (producing) wells, 1 injection well, 7 step-out wells and 6 exploration wells. Production facilities would be located off site at a central facility on private surface over private minerals. Wellheads would be remotely monitored from this facility.

Approximately 63 miles of road would be in use, (of which 20.65 miles would be closed to the public) however, only 12.5 miles of new road construction would be necessary. Approximately 23.6 miles of pipeline would be necessary to transport gas condensate to the central production facility; 6.2 miles would not be adjacent to the access road and 8.9 miles would be adjacent to the access route. There are 8.45 miles of pipeline currently in place.

Alternative 4 Environmental Consequences

The impacts from this alternative would be very similar to those discussed in Alternative 2, but somewhat less because of two fewer wells.

Approximately 4,000 more acres of important wildlife habitats would be affected in this alternative compared to Alternative 2, even though there are two less step-out wells. The reason for this is because of the acres needed for the central gas processing facility and the injection well. However, the overall impacts would be less severe because of remote monitoring, resulting in less vehicular traffic to the wellsites. Ninety-two habitat features would be affected by this alternative.

Impacts to oil and gas exploration and development would be similar to those discussed in Alternative 2. Thirteen of the 25 federal leases would not be developed. Timing restrictions, as discussed under Alternative 2, would cause similar impacts under this alternative. The reservoir being produced by the 1-5 and 1-8 wells would produce between 9.4 and 25.4 BCF of gas. Seven additional wells would be drilled in the reservoir containing the 1-13 and 1-19 wells. Total production from this reservoir would range from 6.9 to 42.8 BCF.

This alternative would remove roadless status from approximately 1,800 acres in the Teton Roadless Area. This would constitute a 3% land area reduction for the Roadless Area and a 12% reduction in the size of the Blackleaf Unit of the Roadless Area.

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